CAN THE LARGE SWINGS IN RUSSIAN LIFE SATISFACTION BE EXPLAINED BY UPS AND DOWNS IN REAL INCOMES?

Paul Frijters *, Ingo Geishecker **, John Haisken-DeNew *** and Michael A. Shields ****

* RSSS, Australian National University, Canberra, Australia
** DIW, Berlin, Germany
*** RWI, Essen, Germany
**** Department of Economics, University of Melbourne, Australia

Abstract
Russians reported large changes in their life satisfaction over the post-transition years. In this paper, we explore the factors that drove these changes using panel data over the period 1995 to 2001, with a particular focus on the role of real income changes. The extent of income changes over this period, clearly suggests that they were exogenously driven. Our empirical framework attempts to combine important insights from both psychology and economics, and we apply a recently developed ordinal effect estimator that allows for the ordinal nature of our life satisfaction measure and controls for individual fixed effects or personality traits. We also adopt a decomposition technique that allows for bias arising from panel attrition when establishing aggregate trends in life satisfaction. Using panel data from the Russian Longitudinal Monitoring Survey (RLMS), we have found that changes in real household income are a powerful predictor of life satisfaction movements explaining up to 30% of large swings in life satisfaction reported between 1996 and 2000. We have also found a very large life satisfaction gain from moving from a rural to a large metropolitan area in Russia. Finally, we have been able to confirm the results of previous studies that life satisfaction rises significantly in response to moving from unemployment to employment, and falls in response to wage arrears, poor health and marital dissolution.

Keywords: Life satisfaction, Income, Russia, Fixed-Effects, Causal Decomposition, Attrition
JEL Classifications: Z1, C23, C25, I31
1. Introduction

Over the last decade there has been a considerable growth in the interest of economists in the factors that determine life satisfaction or happiness (for reviews see Frey and Stutzer, 2002; Frijters et al., 2004a; Oswald, 1997; Senik, 2005). This work has been building upon a long tradition in psychology of investigating individuals' responses to self-assessed wellbeing questions, and has been particularly focused on the impact of unemployment and income. Whilst there is a clear consensus that unemployment is associated with a substantial loss of life satisfaction, the relationship between income and life satisfaction remains much more contentious (Frijters et al., 2004b).

In this paper, we attempt to combine insights from psychology and economics, in terms of the salient issues and empirical techniques, to bear upon the study of life satisfaction in Russia in the post-transition period 1995 to 2001. This was a period of significant economic and social upheaval in Russia that has generated considerable interest in the economics profession (for example, see Brainerd, 1998; Lokshin and Ravallion, 2002; Murphy et al., 1992). As noted by Schyns (2001), ‘the socio-economic changes that have occurred in Russia in the past decade have caused this country to become a true laboratory for the social sciences” (p. 173). More specifically, Senik (2004) describes transition in Russia “as a natural experiment characterized by an unusually high variance in absolute and relative incomes” (p. 2100). In this respect, there have already been a number of studies that have focussed on various issues relating to life satisfaction in Russia (e.g. Graham et al., 2004; Ravallion and Lokshin, 2001; Saris, 2001; Schyns, 2001; Senik, 2004).

In this paper we build upon the contributions of these previous studies by using more recent waves of Russian panel data and addressing a number of important methodological issues that arise when modelling both individual-level and aggregate-level changes in life satisfaction. These four issues are:

1) **Causality and Personality Traits**: Individuals in various life states (marriage, employment, with children) are not random samples of the population. Instead, it is particular (personality) traits on which people select into marriage, jobs, and childrearing. These personality traits are known from the psychological literature to heavily affect life satisfaction (see, for example, Argyle, 1999; and Diener and Lucas, 1999). This makes it problematic to look at cross-sectional data and conclude causal effects from being in various states from the aggregate happiness difference between individuals in various states. Rather, one needs to look at how satisfaction changes when an individual moves from one set of circumstances to another to ascertain causal effects.
2) **Adaptation to Life-Events**: Individuals may well adapt to changed circumstances, and it is therefore important to allow for the fact that the immediate effect of changes in circumstances may differ substantially from their long-term effect. In particular, Clark et al. (2003) and Frey and Stutzer (2003) find evidence of such adaptation in life satisfaction following marriage. Similar work on adaptation to unemployment can be found in Clark et al (2004).

3) **Attrition**: Panel data, which is best equipped to tackle these issues, typically suffers from a great deal of attrition. However, it is often unreasonable to assume that those who leave the panel are random sub-samples. It might well be the case that particularly dissatisfied people have a greater or lesser tendency to stay within a panel than others (Frijters et al., 2004a; Graham et al., 2004). It is therefore important to allow for dynamic sample selection on satisfaction traits when considering trends in life satisfaction based on panel data.

4) **Aggregate Changes**: Changes in observables do not alone drive aggregate changes in life satisfaction in the population. Both individual and aggregate unobservables may drive aggregate changes in life satisfaction, and a modelling framework should be able to allow for such possibilities and attempt to gauge their importance.

To address these four issues we apply a recently developed conditional estimator (Ferrer-i-Carbonel and Frijters, 2004), which allows for unobservable individual heterogeneity in the context of an ordinal model. We believe this estimator is an important econometric tool for estimating ordinal life satisfaction models, since as Senik (2004) recently noted, “there is no accepted general method for panel analysis allowing ordered probit or logit with fixed effects” (p. 2103).¹ We then introduce a decomposition approach that uses the parameter estimates from this model and allows for panel attrition (and new entrants into the panel), in order to more accurately identify the (observed and unobserved) factors that drove the change in Russian life satisfaction in the post-transition period. In particular, we make use of the substantial exogenous changes in real income observed in post-transition Russia (Senik, 2004) to better identify the causal effect of income changes on life satisfaction. In this respect, this study complements our previous research that focused on identifying

¹ This was also identified as an important issue by Clark (2003), who recently noted that “there is no accepted procedure for the panel estimation of ordinal data with fixed effects” (p. 399). Consequently, the norm in the life satisfaction or happiness literature has been to collapse the life satisfaction score to a binary outcome and estimate conditional binary fixed effects models (e.g. Clark et al., 2001; Clark, 2003; Winkelmann and Winkelmann, 1998) or treat the ordinal life satisfaction scale as continuous and fit linear fixed effect models (e.g. Di Tella et al., 2001; Senik, 2004). Ferrer-i-Carbonel and Frijters (2004) provide a detailed discussion of these methodological issues. Das and van Soest (1999) also developed an ordinal fixed effect estimator, which we have fitted to various data sets (including the one used in this paper) and found to provide very similar parameter estimates to the model that we use in this paper. However, we are currently unaware of a published application in the life satisfaction literature that has used the Das and van Soest estimator. We are happy to make our Gauss code available on request.
the role of real income increases in improving the life satisfaction of East Germans in the years following reunification (Frijters et al., 2004a, 2004b).

The paper is set out as follows. In Section 2, we provide some background information on the economic and social upheaval that took place in Russia over the 1990s, as well as briefly reviewing the recent economic and psychological literatures on the determinants of life satisfaction and happiness. The findings from these studies provide us with the baseline individual, economic and demographic characteristics that need to be taken into account in our models. Our data source, the Russian Longitudinal Monitoring Survey (RLMS), is described in detail in Section 3, together with a description of the measure of life satisfaction used as well as a preliminary analysis of changes in life satisfaction between 1995 and 2001. In Section 4, we introduce our econometric and decomposition methodologies. The empirical results are discussed in Section 5, and Section 6 concludes the paper.

2. Background Information

(i) The Russian Context

Detailed discussion of the economic and social changes experienced by Russians in the post-transition years can be found, for example, in Graham et al. (2004) and Klugman and Braithwaite (1998). Here we briefly note a number of features of this period that are most directly relevant to our analysis.

When the coup led by communist hardliners ultimately failed in August 1991, and Boris Yeltsin, the then president of the Russian Federation, declared the end of communist rule, this can be seen as the starting point for Russia’s political and economic transformation. By the end of 1991, the Soviet Union had been dissolved, the last Soviet leader Michael Gorbachev had stepped down, and the Russian Federation had become a sovereign state.

At the beginning of 1992, a number of radical economic reforms were introduced in the Russian Federation that abolished the state trading monopoly, liberalised most prices and established a large-scale privatisation program.² By 1994, around 100,000 large firms representing over 80% of the industrial workforce had been privatised (OECD, 1995). However, regardless of the impressive speed at which privatisation took place, Russia’s economy remained in turmoil throughout most of the 1990’s, with a financial crisis in 1998 exacerbating an already poor situation.

Table 1 presents a number of key economic and social indicators that shed light on the substantial worsening of living conditions that occurred during this period. Between 1991 and 2001, real GDP

² See the European Bank for Reconstruction and Development (1994-2004) for a more detailed account of the political and economic reforms in Russia.
declined by more than 25%. At the same time, consumer prices soared with yearly inflation rates reaching temporary highs of 1526% in 1992 and 875% in 1993, then later levelling off to two digit levels. This was accompanied by a substantial decrease in job security, particularly in the aftermath of the financial crisis, with unemployment rates rising from 0.1% in 1991 to up to 13.3% in 1998. However, with regard to the drastic decline of the GDP, this rise in unemployment seems moderate. In fact, in an environment of very high inflation, most of the labour market adjustment was achieved by substantial real wage cuts thereby minimising layoffs. A further related problem was the widespread occurrence of wage arrears, which also mitigated employment cuts. By 1998, more than 60% of all employees had some amount of outstanding non-paid wages.3

| TABLE 1: Economic and Social Indicators for the Russian Federation, 1991-2001 |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Real GDP growth in %        | -5.00    | -14.50   | -8.70    | -12.70   | -4.10    | -3.60    | 1.40     | -5.30    | 6.40     | 10.00    | 5.10     |
| Inflation Rate in %         | 92.70    | 1526.00  | 875.00   | 311.40   | 197.70   | 47.80    | 14.70    | 27.60    | 86.10    | 20.80    | 21.60    |
| Unemployment rate in %      | 0.10     | 5.20     | 5.90     | 8.10     | 9.50     | 9.70     | 11.80    | 13.30    | 12.60    | 9.80     | 8.90     |
| Real GDP per capita, US$ in prices of 1995 | 4068    | 3475    | 3178    | 2782    | 2670    | 2581    | 2625    | 2492    | 2663    | 2944    | 3108    |
| Life expectancy at birth, female (years) | 74.30    | 73.80    | 71.90    | 71.10    | 71.70    | 72.70    | 72.80    | 72.90    | 72.40    | 72.00    | 72.20    |
| Life expectancy at birth, male (years) | 63.50    | 62.00    | 58.90    | 57.30    | 58.27    | 59.60    | 60.90    | 61.30    | 59.90    | 59.00    | 59.80    |
| Life expectancy at birth, total (years) | 68.77    | 67.76    | 65.24    | 64.03    | 64.82    | 65.99    | 66.70    | 66.96    | 66.00    | 65.34    | 65.85    |


At the same time, real GDP per head in 1992 and the following years was substantially below that of 1991, a decline that was accompanied by a substantial increase in income inequality. The World Bank (2001) reports that the Gini-Coefficient, as a measure of income inequality, nearly doubled between 1987/90 and 1993/94, which is alarming even in comparison to other transition economies. Accordingly, poverty significantly increased. Klugman and Braithwaite (1998) reported that the share of households living in poverty increased from 25% in 1992 to 35% by 1995. The dramatic worsening of average living conditions was also reflected by life expectancy trends. Males in particular experienced a significant decline in life expectations from 63.5 years in 1991 to 57.3 years in 1994. Life expectancy improved thereafter, but was still considerably lower in 2001 than in 1991.

3 Authors’ own calculation on the basis of the RLMS. Since 2000, the problem of wage arrears has to a large extent been successfully addressed.
To summarise events in Russia since 1991, we can clearly point to a period of deteriorating living conditions and high economic uncertainty. However, following the financial crisis of 1998, and the depreciation of the Rouble, the Russian economy started to gradually recover, with real GDP and real personal incomes increasing and unemployment and poverty rates falling.

(ii) The Determinants of Life Satisfaction and Happiness

The investigation of the factors affecting human life satisfaction or happiness is central to the discipline of psychology, but economists have become increasingly active in this field in recent years. In particular, economists have been interested in establishing the relationships between income, unemployment and life satisfaction. Whilst there is a firm consensus based on both cross-sectional and longitudinal data that unemployment leads to a substantial loss of life satisfaction (with or without controlling for income) regardless of the exact definitions used, the relationship between income and satisfaction is less clear. Perhaps the most widely accepted viewpoint is that income does matter, but not very much (e.g. Easterlin, 1995; Oswald, 1997; Diener and Oishi, 2000; Frey and Stutzer, 2002). This has led to interest in the role of relative rather than absolute income in determining life satisfaction (e.g. Clark and Oswald, 1994; McBride, 2001) and the relationship between income and life expectations (e.g. Easterlin, 2001). Other time-varying variables economists typically include in panel data models of life satisfaction are marital status, children and health variables. Marriage is typically found to be positively associated with higher life satisfaction; however, the actual causal mechanism(s) underlying this relationship are still unclear. In contrast, there does not appear to be any consistency with regard to the estimated effect of children on life satisfaction. Poor health is universally found to associate with low life satisfaction.

As mentioned earlier, an important insight from both psychology and the recent economics literature that is relevant to this paper is the strong presence of unobservable individual heterogeneity, especially personality traits, which are likely to also be correlated with observable determinants of life satisfaction such as marriage (see Diener and Lucas, 1999; Ravallion and Lokshin, 2001). This makes it important to use econometric or statistical models, based on panel data, which take account of fixed individual traits. In the absence of a readily available fixed effect estimator for ordinal outcomes (given the typical small number of observations for each individual in a panel), the main approach

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4 For informative reviews and recent contributions (but not an exhaustive list), see Clark and Oswald, 1994; Clark et al., 1996; Gerlach and Stephan, 1996; Gerdtham and Johannesson, 1997; Korpi, 1997; Oswald, 1997; Theodossiou, 1998; Winkelmann and Winkelmann, 1998; Kahneman et al., 1999; Frey and Stutzer, 2000; Frijters, 2000; Bertrand and Mullainathan, 2001; Clark et al., 2001; Di Tella et al., 2001; McBride, 2001; Ravallion and Lokshin, 2001; Easterlin, 2001; Frey and Stutzer, 2002; Shields and Wailoo, 2002; Frijters et al., 2004a, 2004b; Di Tella et al., 2003; Clark, 2003; Ferrer-i-Carbonel and Frijters, 2004; Lalive and Stutzer, 2004; Shields and Wheatley Price, 2004; and Senik, 2005.
taken in the literature has been to arbitrarily collapse the life satisfaction scale into a binary outcome (e.g. satisfied (1) if life satisfaction >7 on a 0-10 scale; not satisfied (0) if life satisfaction <8) and estimate the Chamberlain binary fixed effect logit model. Examples of this approach are Clark and Oswald (2002) and Clark (2003) who analysed data from the British Household Panel Study (BHPS), and Clark et al. (2001) and Winkelmann and Winkelmann (1998) who examined data from the German Socio-Economic Panel (GSOEP). It is clear that this approach does not use a large amount of observed information about changes in individuals' life satisfaction over time, which will be discussed further in Section 4(i). If we adopt this approach we lose 45% of observations.

(iii) Russian Studies
There have already been a number of studies that have used Russian panel data to investigate various issues relating to life satisfaction, happiness or well-being. In particular, a volume of the Journal of Happiness Studies, published in 2001, contained a number of papers based on the RUSSET panel study that ran between 1993 and 1995, that focused on testing various psychological theories of life satisfaction (see Saris, 2001; Schyns, 2001). However, the studies most relevant to the one presented in this paper are the three that have been based on the RMLS, and have used panel data techniques to attempt to better establish the causal determinants of life satisfaction.

In the first of these studies, Ravallion and Lokshin (2001) analysed a balanced panel from the 1994 and 1996 waves of the RLMS. Estimating a first-difference model of life satisfaction on the balanced panel of individuals who were observed in both 1994 and 1996, they found an important role for income in determining subjective economic welfare. Important, household income was found to be a much stronger predictor of life satisfaction than individual income, which helps justify the focus on household income in our analysis. Ill-health and becoming unemployed were found to lower life satisfaction given current income, and there was some evidence to suggest that returning to work does not restore welfare without an income gain. This suggests a permanent welfare loss even from a transient period of unemployment. In many ways, the analysis presented in this paper can be seen as an extension of that undertaken by Ravallion and Lokshin (2001), where we are now able to utilise a far greater variation in life satisfaction and socio-economic characteristics using data up until 2001. We also attempt to establish the bias that arises from using a balanced panel given the fairly high level of attrition in the RLMS.

Graham et al. (2004) estimated ordered logit models of life satisfaction using data from the 1995 and 2000 rounds of the RLMS. The results from this cross-sectional estimator found that life satisfaction was U-shaped in age, and was positively associated with being male, more highly educated, having good health, household equivalised income and being in employment. The authors
also noted a marked consistency across the estimates for the two years, even given the large socio-
economics changes taking place in Russia over the period. However, they also note that these socio-
economic characteristics explained only about 3% of the variation in life satisfaction. The authors then
estimated a first-differenced (2000-1995) ordered logit model to difference out individual fixed effects
particularly personality traits using a balanced panel of individuals observed in both 1995 and 2000.
Importantly, only three variables were found to have a significant effect on changes in life satisfaction,
namely, increased log income (+), getting divorced (-) and leaving school (-). Additional experiments,
where the residual of the life satisfaction model estimated using only 1995 data, was included in a
model only using 2000 data, found the income effect to be robust. However, some caution should be
given to these panel results in the light of the large attrition that took place in the RLMS between 1994
and 2000 (we have calculated that only 26% of respondents in 1994 were observed in 2000). It was,
however, noted in the study that there was little difference in the observable characteristics of the
respondents in both years of data with the initial entire sample in 1995.

Finally, Senik (2004) used data from the RLMS for 1994 to 2000, and her focus was on
investigating the relationship between life satisfaction and income distribution. The paper used two
estimation techniques: an ordered logit model with controls for individual-specific averages, and a
linear fixed effects regression model that treated ordinal life satisfaction as a continuous variable. A
model of attrition was also estimated, and the inverse of the predicted probability for each individual
were used as weights. The study confirmed the importance of socio-economic and demographic
characteristics in explaining variations in life satisfaction. However, the main result of the study,
contrary to expectations, was that reference group income exerted a positive influence on individual
life satisfaction which the author suggested implied that individuals use relative income (i.e. the
income of other) in a cognitive manner rather than for comparison purposes (i.e. individual who see
other peoples incomes increasing will become more optimistic themselves about their future income.
We also examine this issue to some extent in this paper using a relatively simply measure of
comparison income.

3. Data and Sample Characteristics

(i) Data
The Russian Longitudinal Monitoring Survey (RLMS) is a household-based survey that was designed
to measure the effects of Russian reforms on the economic well-being of households and individuals
over the 1990s. There have now been 11 rounds or waves of the survey, the last undertaken in 2002.
However, the RLMS has had two distinct phases. Phase 1 of the survey was conducted between 1992
and 1994 (Rounds 1 to 4), but it is widely accepted that the quality of data from Phase 1 was very poor. At the beginning of 1994, Phase 2 of the survey began when the Survey Design and Analysis Unit at the Institute for Social Research, University of Michigan, took over the design and running of the survey. Ravallion and Loskin (2001) discuss the high quality of the Phase 2 data. More details of the RLMS can be found at the project website: http://www.cpc.unc.edu/projects/rlms/home.html.

In this study we use data from the second phase of the RLMS, beginning in 1994 with Round 5 and following households up until Round 10, collected in 2001. We focus on respondents aged 18-65, which provides a sample of just over 38,000 observations on 13,224 individuals. Round 5 data is used in the econometric analysis to calculate a number of variables that capture major life-events, and is therefore not directly included in our econometric models. Importantly for our analysis, the RLMS does suffer from considerable panel attrition with only 15.2% of respondents being observed in all of the 6 rounds, and the average number of rounds observed being 3.0. However, the RLMS is replenished each round thereby maintaining the sample size. The potential biases that new entrants and exits to/from the panel can make to aggregate trends in life satisfaction will be examined in more detail later in the paper.

Given that income has been one of the main determinants of life satisfaction explored by economists, the derivation of real income, given the very high levels of inflation in Russia over the period (see Table 1), is of particular importance. We therefore deflate all monthly income data using the monthly consumer price index provided by Goskomstat (Statistics Russia). The other time-varying explanatory variables that we use are described in Section 4(iii).

In terms of the main socio-economic characteristics of the sample, the average age is 40, 45% are male, 65% are married, 8% are divorced, 16% were born outside of Russia, 56% have a child aged between 7 and 17, 29% have a child aged less than 7, 12% report to be in poor health, 18% have a university qualification and 10% are unemployed. The average real monthly household income of the period 1994 to 2001 was 5,200 roubles (approx. £100 or US$180).

(ii) Measuring Life Satisfaction
The question asked in each Round of the survey, which forms the basis for our dependent variable of interest is:

“To what extend are you satisfied with your life in general at the present time”?
The answers to this question were reported on a five-point ordinal scale: Fully Satisfied (4), Rather Satisfied (3), Neither Satisfied or Dissatisfied (2), Less than Satisfied (1) and Not at all Satisfied (0). There were very few missing responses to this question in any of the rounds.

### TABLE 2: The Distribution of Life Satisfaction in Russia, 1994-2001

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Fully satisfied (4)</td>
<td>3.2</td>
<td>3.3</td>
<td>2.4</td>
<td>1.7</td>
<td>3.3</td>
<td>4.9</td>
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<tr>
<td></td>
<td>(0.21)</td>
<td>(0.22)</td>
<td>(0.20)</td>
<td>(0.17)</td>
<td>(0.22)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Rather satisfied (3)</td>
<td>10.5</td>
<td>10.1</td>
<td>9.3</td>
<td>9.4</td>
<td>14.0</td>
<td>17.6</td>
</tr>
<tr>
<td></td>
<td>(0.37)</td>
<td>(0.38)</td>
<td>(0.39)</td>
<td>(0.38)</td>
<td>(0.42)</td>
<td>(0.45)</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied (2)</td>
<td>20.4</td>
<td>20.8</td>
<td>21.2</td>
<td>18.2</td>
<td>22.4</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>(0.49)</td>
<td>(0.51)</td>
<td>(0.54)</td>
<td>(0.50)</td>
<td>(0.51)</td>
<td>(0.51)</td>
</tr>
<tr>
<td>Less than satisfied (1)</td>
<td>41.7</td>
<td>36.6</td>
<td>38.2</td>
<td>35.5</td>
<td>37.6</td>
<td>36.8</td>
</tr>
<tr>
<td></td>
<td>(0.60)</td>
<td>(0.60)</td>
<td>(0.65)</td>
<td>(0.62)</td>
<td>(0.59)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>Not at all satisfied (0)</td>
<td>24.3</td>
<td>29.3</td>
<td>29.0</td>
<td>35.2</td>
<td>22.7</td>
<td>15.7</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.57)</td>
<td>(0.60)</td>
<td>(0.61)</td>
<td>(0.51)</td>
<td>(0.43)</td>
</tr>
<tr>
<td>Average</td>
<td>1.27</td>
<td>1.21</td>
<td>1.18</td>
<td>1.07</td>
<td>1.38</td>
<td>1.59</td>
</tr>
<tr>
<td>Sample</td>
<td>6807</td>
<td>6435</td>
<td>5641</td>
<td>6054</td>
<td>6667</td>
<td>7301</td>
</tr>
</tbody>
</table>

*Note: Standard errors of mean are in parentheses.*

Table 2 shows the distribution of life satisfaction for the RLMS sample in each of the panel years. Looking at the mean values we can see that average life satisfaction was very low by international comparison in Russia in all years. Life satisfaction fell after 1994 reaching a low of 1.07 in 1998, which was followed by a large significant increase of 49% by 2001. In particular, 2000 and 2001 saw a very large decline in the percentage of Russians reporting that they were not at all satisfied with their life. Although not shown in Table 2, there was a large amount of mobility both up and down the ordinal life satisfaction scale by individuals in this period. Senik (2004) noted that only about 40% of respondents remained at the same level of life satisfaction from one round to another. In terms of international comparisons, the size of these change in average life satisfaction occurring in less than a decade is large and serves as a good basis for our econometric models that require such individual-specific variation for identification of the parameters.

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5 There also exist price deflators at the regional level. However, these are only available on a yearly basis. Against the backdrop of very high inflation rates over the observation period, we consider the aggregated monthly price deflator to be superior.
The time-profile of life satisfaction is further highlighted in Figure 1, where changes in life satisfaction are clearly shown to be correlated with changes in real household monthly income. In particular, life satisfaction reached its lowest point in 1998, following the substantial fall in income experienced between 1996 and 1998. Moreover, it is reasonable to think that income changes of this magnitude, over such a short period of time, clearly contain a great deal of exogenous variation. Unemployment also reached its highest level in 1998.

However, given the large amount of panel attrition, some caution should be given regarding the extent to which this trend was due to actual improvements in the economic and social living conditions of Russians or sample attrition. The latter would be a problem if it were individuals with the lowest life satisfaction that dropped out of the panel. We will investigate this issue further using the decomposition analysis described in Section 4(ii).
4. Econometric Model, Decomposition Analysis and Explanatory Variables

(i) Fixed Effect Ordered Logit Model

The recent psychology literature has found that fixed personality traits are very important predictors of general satisfaction (see, for example, Argyle, 1999; Diener and Lucas, 1999). Lacking these variables, we use the following fixed-effect ordered logit model developed in Ferrer-i-Carbonell and Frijters (2004), and applied to the case of life satisfaction in East Germany following reunification by Frijters et al. (2004a, 2004b), in order to correct for the presence of such unobservables.\(^6\)

\[
GS_i^* = x_i' \beta + \delta_i + f_i + \epsilon_i
\]

where \(GS_i^*\) is latent life satisfaction; \(GS_i\) is observed life satisfaction on the ordered 0-4 scale; \(\lambda_k\) is the cut-off point (increasing in \(k\)) for the satisfaction answers; \(x_i\) are the observable time-varying characteristics; \(\delta_i\) denotes unobserved time-varying general circumstances; \(f_i\) is an individual fixed characteristic and \(\epsilon_i\) is a time-varying logit-distributed error-term that is orthogonal to all characteristics. Our conditional estimator for \(\delta_i\) and \(\beta\) maximizes the following conditional likelihood:

\[
L[I(GS_{i1} > k_i), \ldots, I(GS_{it} > k_i) | \sum_t I(GS_{it} > k_i) = c]
\]

\[
= \frac{e^{\sum_{t=1}^T I(GS_{it} > k_i) x_i' \beta}}{\sum_{GS \in S(k_i, c)} e^{\sum_{t=1}^T I(GS_{it} > k_i) x_i' \beta}}
\]

which is the likelihood of observing which of the \(T\) satisfactions of the same individual are above \(k_i\), given that there are \(c\) out of the \(T\) satisfactions that are above \(k_i\). Here, \(S(k_i, c)\) denotes the set of all

\(^6\) Most of the studies that have used panel data to examine the determinants of life satisfaction have tested the appropriateness of the random effects versus fixed-effects specifications. In each case, the random-effects model, based on the assumption that the unobservable individual effect (e.g. personality traits) is uncorrelated with the explanatory variables, is clearly rejected. Our own test results support this finding; therefore we only report results for the fixed-effects specification in this paper.
possible combinations of \( \{GS_{it}, \ldots, GS_{ij}\} \) such that \( \sum I(GS_{it} > k_i) = c \). Also, \( GS_{it} \) is used to denote the random variable and \( GS_{it} \), the realisation.

This model is an extension of the fixed-effect logit model by Chamberlain (1980). Unlike the Chamberlain methodology, which imposes a common threshold for everyone (say, \( k \)), our model uses person-specific thresholds (say, \( k_i \)). When some individuals only report values between 4 and 6, and others only between 7 and 9, then the use of the same barrier for everyone cannot record changes for both groups of individuals. Some individuals then have to be dropped from the estimation procedure. With individual specific barriers all individuals whose satisfactions differ over time can be included. The most important advantage is that this allows us to use more than 90 percent of the observations. In comparison, the loss of data in applications with the Chamberlain method is usually close to 50 percent (see, for example, Winkelmann and Winkelmann, 1998; Hamermesh, 2001; Clark et al., 2001; Clark, 2003). Further details of our estimator can be found in Ferrer-i-Carbonell and Frijters (2004).

(ii) Causal Decomposition Analysis

We decompose changes in expected latent satisfaction for Russian males and females separately in the post-transition period using the estimates from the fixed-effects models. This means we analyse:

\[
E\{GS_{t+1}^* - GS_t^*\} = (x_{t+1} - x_t)\hat{\beta} + (\hat{\delta}_{t+1} - \hat{\delta}_t) + (E_{t+1,f} - E_{t,f})
\]  

(3)

Denote the set of Russians who are in the sample at time \( t \) and at time \( t+1 \) as \( S_t \). For the individuals in \( S_t \) (the balanced panel), this decomposition is straightforward, because for these individuals, \((E_{t+1,f} - E_{t,f}) = 0\). A complicating factor arises when we consider the importance of those individuals who are only observed in either \( t \) or \( t+1 \), i.e. the inflows and outflows of the RLMS. For these individuals, \((x_{t+1} - x_t)\hat{\beta} + (\hat{\delta}_{t+1} - \hat{\delta}_t)\) is still easily computed, but the unknown component \((E_{t+1,f} - E_{t,f})\) poses a problem. This term is only equal to zero when the distribution of the unknown characteristics is constant over time. This is clearly very improbable because, for example, education levels may differ. From the fixed-effect ordered logit results alone, there is no information on \((E_{t+1,f} - E_{t,f})\). So we have to use extra information in order to get an estimate of this term.

In order to obtain an estimate of \((E_{t+1,f} - E_{t,f})\), we make the following assumption:
\[ E\{GS(GS^* + \Delta) - GS(GS^*)\} = \Delta \mu + \sigma(\Delta) \] (4)

where \( \Delta \) is an arbitrary small increase in latent life satisfaction, and the \( \sigma(\Delta) \) is the approximation error which we will ignore in the remainder. This assumption implies that the change in observed satisfaction is (by approximation) linear in the change in latent satisfaction. The responsiveness itself, \( \mu \), is taken to be constant over time. This first-order approximation can now be used, by noting that we can estimate \( \mu \) by calculating, for those individuals whom we observe in all time-periods, what the response is of the observed satisfaction levels to the estimated changes in latent satisfaction. A consistent estimator for \( \mu \) is therefore:

\[
\hat{\mu} = \frac{\sum_{i} \sum_{S_i} (GS_{t+1} - GS_t)}{\sum_{i} \sum_{S_i} (z_{it+1} - z_{it})\gamma}
\] (5)

where \( z_i \) includes both \( x_i \) and the time dummies, and where \( \gamma \) includes \( \beta \) and \( \delta \). Having this estimate of \( \mu \), we can now use this to obtain an estimate of \( (E_{t+1}f - E_tf) \):

\[
(E_{t+1}f - E_tf) = \frac{GS_{t+1} - GS_t}{\mu} - (\bar{z}_{t+1} - \bar{z}_t)\hat{\gamma}
\] (6)

This captures the degree of changes in the sample composition over time. In order to provide additional insight in the factors affecting life satisfaction we further decompose \( (\bar{z}_{t+1} - \bar{z}_t)\hat{\gamma} \) into separate groups of variables. In particular, we decompose the total changes in latent life satisfaction into changes in:

1. **Family**: marital status (married, divorced, widowed, divorced since last interview), children (number of children aged 0-6, number of children aged 7-17 and new born since last interview);
2. **Health**: own health, invalid in household and death in family (death in household since last interview, spouse died since last interview);
3. **Job**: employment status related variables (self-employed, unemployment, unemployment multiplied by local area unemployment rate, non-participant);
4. **Income**: real household income and wage arrears;
5. **Area**: average real area income and living in a metropolitan area;
6. **Year**: unobserved average variables (year dummies and age-squared (which cannot by itself have an effect));
7. **FE**: The unobserved individual effects distribution.

It is possible to attach a causal explanation to the changes due to groups 1 to 5. Given the changes in characteristics, they explain a part of the changes in latent satisfaction levels. The changes due to groups 6 and 7 are not explained by anything observed and hence form the ‘true’ unexplained part of the changes over time. The higher these terms, the less well our variables capture the important aspects of the changes over time.

We can construct confidence intervals for most elements in the decomposition by noting that, because \( \hat{\beta} \sim N(\beta, \Sigma) \), it holds that \( (\overline{x}_{t+1} - \overline{x}_t)\hat{\beta} \sim N(\beta, (\overline{x}_{t+1} - \overline{x}_t)\Sigma(\overline{x}_{t+1} - \overline{x}_t)') \). When we replace \( \Sigma \) with its Maximum Likelihood estimate, this yields confidence intervals. Since the term \( \frac{GS_{t+1} - GS_t}{\mu} \) in the formula \( (E_{e,1,t}f - E_{e,t}f) \) is not well behaved (i.e. there is no a priori reason for it to have a bounded mean or variance), we cannot use standard inference or bootstrapping methods to compute confidence bands for \( (E_{e,1,t}f - E_{e,t}f) \). What we hence report is whether \( (E_{e,1,t}f - E_{e,t}f) \) contains 0 in the set of values when each of the stochastic elements in \( (E_{e,1,t}f - E_{e,t}f) \) can range in its 95% confidence interval.

(iii) **Explanatory Variables**
In order to get a baseline specification for the covariates in our life satisfaction models we closely follow the previous studies of life satisfaction and happiness mentioned in Section 2. Therefore, we control for quadratic age\(^7\), marital status, health, number and age of children, having someone else with bad health in the household (usually a spouse, child or parent), employment status (particularly unemployment), real household income and broad region of residence. In addition, we also include an interaction of unemployment with the unemployment rate in the area as a number of studies have found evidence that the detrimental effect of unemployment on life satisfaction is smaller for those individuals who reside in high unemployment areas. This could reflect a reduced stigma of being unemployed (see Clark, 2003; Lalive and Stutzer, 2004; Shields and Wheatley Price, 2004). We also control for real average area income, which is calculated separately for around 100 areas in Russia.
Including average area income as a covariate can provide an estimate of the effect of relative income on life satisfaction (Senik, 2004). However, we realise that this measure might well not be the 'norm' or comparison group that individuals use to compare their economic position with. Alternatively, real income could be capturing different levels of public amenities and crime rates.

We also control for the effect of a number of major life-events that took place over the last twelve months. These are: becoming divorced, death of spouse, death of another family member and the birth of a child. Finally, in order to capture time-varying aggregate changes in the economic and social environment for all Russians, we also include year controls in the model. Throughout this paper, given that it is now standard to allow for the determinants of life satisfaction to differ by gender, we fit separate models for males and females.

5. Empirical Results

The parameter estimates from the fixed effect ordered logit models are presented separately for males and females in Table 3. Note that the parameter estimates indicate the change in latent life satisfaction. Overall, in this a period of substantial economic and social transition which provides us with a great deal of variation in the socio-economic characteristics of the sample, the parameter estimates appear to be reasonable consistent with the qualitative results found using British (e.g. Clark, 2003) and German (e.g. Winkelmann and Winkelmann, 1998; Frijters et al., 2004a) panel data. They are also fairly consistent with the estimates presented by Ravallion and Lokshin (2001) and Senik (2000), which are based on earlier waves of the RLMS.

(i) The Effect of Changes in Socio-Economic Characteristics on Life Satisfaction

Starting with the family-related variables we see that getting married leads to a significant but small increase in life satisfaction, with the size of this gain being roughly equal for males and females. In contrast, both getting divorced or becoming widowed lead to larger declines in satisfaction, with divorce causing 0.678 and 0.666 declines in latent life satisfaction for males and females, respectively. An unexpected result comes from the estimate for the effect of a recent divorce on life satisfaction. If we think that individuals might over time adapt to their new divorced status, or that the immediate year following a divorce might be the most detrimental to life satisfaction, we would anticipate a negative parameter estimate for recently divorced. However, we find the opposite, which might tentatively suggest that it is a relief to finally get divorced, but this initial gain in life satisfaction is quickly lost. The evidence from the life satisfaction literature is mixed with respect to the effect of

\footnote{Note that we cannot simultaneously control for age, year and fixed-effects.}
children on life satisfaction. There is some agreement that to look after younger children is stressful whilst older children increase life satisfaction. The average effect of having one more child seems to be about zero. The signs of our parameters estimates support this, but are not statistically significant for either males or females. Moreover, we find no evidence that recently having had a baby affects life satisfaction.

Our estimates clearly confirm the consensus view that health is a major determinant of life satisfaction, with moving to poor health being associated with a decline in latent life satisfaction of 0.426 and 0.428 for males and females, respectively. Importantly, we also find that the occurrence of another household member (spouse, child, parents) moving to poor health has a significant detrimental effect on life satisfaction, but the size of this effect is only about one-third of the effect of own health status. Whilst we would expect that a death in the family might lower life satisfaction, particularly the death of a spouse, we find no significant evidence that this is the case even though we observe about 200 spouse deaths in the panel. This is in sharp contrast to our findings for East and West Germans (Frijters et al., 2004b), where death of a spouse had the largest detrimental effect on life satisfaction of all the socio-economic characteristics.

As with nearly every study in the life satisfaction literature we find that becoming unemployed, relative to being in employment, leads to a significant fall in life satisfaction for both men and women. Becoming unemployed is roughly equal to being divorced in terms of its negative effect on life satisfaction. Interestingly, however, we do not find that self-employment is a significantly better state to be in than regular employment. Several recent studies have focused on the interaction between being unemployed and the level of unemployment in the area or region. Clark (2003), Lalive and Stutzer (2004) and Shields and Wheatley Price (2004) have all found evidence that the detrimental effect of being unemployed on life satisfaction is smaller if there are many others in the same geographical area who are also unemployed. One interpretation of this finding is that the stigma of unemployment is less, which might lead to a lower incentive to search for work and thus creating an unemployment enclave. We find the opposite: the higher the local unemployment rate, the more detrimental own unemployment. This effect is only significant at the 10% level for females though. One explanation is that neighbours serve as a support network, meaning that in areas with high unemployment rates, there is less social support for other unemployed individuals.
TABLE 3: The Determinants of Life Satisfaction for Russian Males and Females: Ordered Logit Models with Fixed-Effects

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>(</td>
</tr>
<tr>
<td>Married</td>
<td>0.173</td>
<td>1.67</td>
</tr>
<tr>
<td>Divorced</td>
<td>-0.678</td>
<td>3.98</td>
</tr>
<tr>
<td>Widowed</td>
<td>-0.611</td>
<td>1.70</td>
</tr>
<tr>
<td>Divorced since last interview</td>
<td>0.517</td>
<td>2.25</td>
</tr>
<tr>
<td>Number of children aged 0-6</td>
<td>-0.032</td>
<td>0.58</td>
</tr>
<tr>
<td>Number of children aged 7-17</td>
<td>0.048</td>
<td>1.15</td>
</tr>
<tr>
<td>New born since last interview</td>
<td>-0.080</td>
<td>0.73</td>
</tr>
<tr>
<td>Poor Health</td>
<td>-0.426</td>
<td>4.68</td>
</tr>
<tr>
<td>Poor health of other household member</td>
<td>-0.151</td>
<td>2.67</td>
</tr>
<tr>
<td>Death in household since last interview</td>
<td>0.018</td>
<td>0.16</td>
</tr>
<tr>
<td>Spouse died since last interview</td>
<td>-0.178</td>
<td>0.47</td>
</tr>
<tr>
<td>Self-employed</td>
<td>0.069</td>
<td>0.64</td>
</tr>
<tr>
<td>Unemployed</td>
<td>-0.534</td>
<td>3.81</td>
</tr>
<tr>
<td>Unemployed * Local area unemployment rate</td>
<td>-0.012</td>
<td>1.31</td>
</tr>
<tr>
<td>Non-participant</td>
<td>-0.104</td>
<td>1.28</td>
</tr>
<tr>
<td>Log real household income</td>
<td>0.138</td>
<td>5.52</td>
</tr>
<tr>
<td>Current wage arrears to a member of the household</td>
<td>-0.168</td>
<td>3.55</td>
</tr>
<tr>
<td>Average real area income / 1000</td>
<td>0.018</td>
<td>1.25</td>
</tr>
<tr>
<td>Live in large metropolitan area</td>
<td>2.065</td>
<td>1.64</td>
</tr>
<tr>
<td>Age squared/100</td>
<td>-0.058</td>
<td>0.33</td>
</tr>
<tr>
<td>Year dummies</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Mean Log likelihood</td>
<td>-1.464</td>
<td></td>
</tr>
<tr>
<td>( \hat{\mu} )</td>
<td>0.302</td>
<td></td>
</tr>
<tr>
<td>Sample (observations)</td>
<td>14505</td>
<td></td>
</tr>
<tr>
<td>Sample (individuals)</td>
<td>3725</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Absolute t-statistics shown. The omitted categories are single, not divorced since last interview, no newborn since last interview; good health, nobody in household with poor health, no death in household since last interview, spouse did not die since last interview; employed; no wage arrears owed to household members; do no reside in a large metropolitan area.

One of the most active debates in this literature concerns the relationship between income and life satisfaction, where most panel studies have found only a weak positive effect of income increases on satisfaction. There have been a number of proposed explanations for this finding, in particular that
individuals might quickly adapt to increased income or that it is ‘relative’ income rather than absolute income that is important. In the context of Russia in the post-transition years we find that changes in real incomes, which given their size in such a short period of time are likely to be largely driven by exogenous factors, are a significant predictor of changes in life satisfaction. We find that changes in household income are a significant predictor of changes in life satisfaction for both Russian men and women, with a one-log point increase in real income causing latent satisfaction to rise by about 0.14. The results of the decomposition analysis presented in the next sub-section will provide further insights into the role of income changes in explaining aggregate movements in life satisfaction in Russia.

Given the widespread problem of wage arrears faced by many Russian workers (see, for example, Clark and Maurel, 2001), an interesting finding is that, conditional on real household income, such a situation significantly and negatively impacts on reported life satisfaction. Moreover, the effect of a household member being owed money has the same quantitative effect as a one-log point decrease in real household income.

The area and urban context of where you live appear to be very important in Russia. Conditional on own household income, living in a relatively richer area leads to increased life satisfaction which is significant at the 10% level for females. However, the largest effect (significant at the 10%) of any of the socio-economic variables we control for, is for the movement to a large metropolitan area. In particular, the latent life satisfaction gain of such a move is 2.065 for males and 2.218 for females. Given the lower level of Russian life satisfaction generally over this period, with only a very small minority of Russian reporting that were fully satisfied with their life, it must be the case that living outside of the main metropolitan areas in Russia is particularly bleak.

(ii) Explaining Aggregate Changes in Russian Life Satisfaction

The results from our decomposition analyses are presented by gender in Table 4. We can see that there were three main drivers to changes in latent life satisfaction, namely changes in real household income, aggregate changes affecting all Russians captured by the year dummies, and changes in the fixed-effects distribution. The family, health, job, and area characteristics explain very little of these aggregate changes in life satisfaction.

Over the whole period 1995 to 2001 average latent life satisfaction increased by 0.523 for males and 0.584 for females (which are also reflected in Figure 1), which are large movement by international standards over a short period of time. Importantly, about 10% of this aggregate improvement for both genders can be explained by increased real household income (average real household income increased from 3,203 roubles in 1998 to 4,980 roubles in 2001). Moreover, looking
at the year-on-year changes it is clear that life satisfaction in Russia clearly responded to changes in real income, with the fall in income experienced between 1996 and 1998 accounting for 19% (-0.089/-0.481) of the decline in life satisfaction for men and 27% (-0.100/-0.364) for women. Similarly, the increase in real income observed between 1998 and 2000 accounted for 18% (0.093/0.520) and 12% (0.100/0.834) for males and females, respectively, of the large gain in average latent life satisfaction observed over this two-year period. The importance of income in determining life satisfaction in Russia confirms our previous finding for the case of East Germany in the years following reunification (Frijters et al., 2004a, 2004b).

TABLE 4: Decomposition Results for Russian Males and Females

<table>
<thead>
<tr>
<th>From → To</th>
<th>Family</th>
<th>Health</th>
<th>Job</th>
<th>Income</th>
<th>Area</th>
<th>Year</th>
<th>FE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995 → 1996</td>
<td>-0.001</td>
<td>0.001</td>
<td>-0.007*</td>
<td>-0.010*</td>
<td>0.005</td>
<td>0.126*</td>
<td>-0.028</td>
<td>0.086</td>
</tr>
<tr>
<td>1996 → 1998</td>
<td>0.002</td>
<td>-0.003</td>
<td>-0.036*</td>
<td>-0.089*</td>
<td>-0.022</td>
<td>-0.323</td>
<td>-0.010</td>
<td>-0.481</td>
</tr>
<tr>
<td>1998 → 2000</td>
<td>-0.009*</td>
<td>-0.002</td>
<td>0.008*</td>
<td>0.093*</td>
<td>-0.043</td>
<td>0.635*</td>
<td>-0.162</td>
<td>0.520</td>
</tr>
<tr>
<td>2000 → 2001</td>
<td>-0.001</td>
<td>-0.002</td>
<td>0.017*</td>
<td>0.060*</td>
<td>-0.002</td>
<td>0.394*</td>
<td>-0.068</td>
<td>0.398</td>
</tr>
<tr>
<td>Total Change 1995 → 2001</td>
<td>-0.009</td>
<td>-0.007</td>
<td>-0.017</td>
<td>0.055</td>
<td>-0.062</td>
<td>0.832</td>
<td>-0.268</td>
<td>0.523</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995 → 1996</td>
<td>-0.008*</td>
<td>0.001</td>
<td>-0.002*</td>
<td>-0.008</td>
<td>0.014</td>
<td>0.203</td>
<td>-0.493*</td>
<td>-0.294</td>
</tr>
<tr>
<td>1996 → 1998</td>
<td>-0.002</td>
<td>-0.001</td>
<td>-0.009*</td>
<td>-0.100*</td>
<td>-0.031</td>
<td>-0.320*</td>
<td>0.099</td>
<td>-0.364</td>
</tr>
<tr>
<td>1998 → 2000</td>
<td>-0.020*</td>
<td>0.005*</td>
<td>0.004*</td>
<td>0.100*</td>
<td>-0.046</td>
<td>0.685*</td>
<td>0.107</td>
<td>0.834</td>
</tr>
<tr>
<td>2000 → 2001</td>
<td>-0.004*</td>
<td>0.002</td>
<td>0.007*</td>
<td>0.058*</td>
<td>-0.010</td>
<td>0.443*</td>
<td>-0.088</td>
<td>0.408</td>
</tr>
<tr>
<td>Total Change 1995 → 2001</td>
<td>-0.035</td>
<td>0.006</td>
<td>-0.001</td>
<td>0.050</td>
<td>-0.073</td>
<td>1.011</td>
<td>-0.375</td>
<td>0.584</td>
</tr>
</tbody>
</table>

Notes: * indicates statistically significant at the 95% confidence level. Some rounding-up error may be present in the calculations of the Total Changes. ‘Family’ shows the combined effect of marital status (married, divorced, widowed, divorced since last interview), children (number of children aged 0-6, number of children aged 7-17 and new born since last interview); Health’ shows the combined effect of own health, invalid in household and death in family (death in household since last interview, spouse died since last interview); ‘Job’ shows the combined effect of the employment status variables (self-employed, unemployment, unemployment multiplied by the local area unemployment rate, non-participant); ‘Income’ shows the combined effect of household income and wage arrears; ‘Area’ shows the combined effect of average area income and living in a metropolitan area; ‘Year’ shows the combined effect of the dummy variables for year of survey and also captures aggregate ageing in the panel; ‘FE’ is the total effect of changes in the fixed-effect distribution.

While life satisfaction in Russia clearly reacted to changes in real income, the largest part of the overall increase in life satisfaction over the period 1995 to 2001 is explained by general improvements in aggregate unobservables captured by the year dummies (this is not due to the effect of squared age:  

| 1995 → 2001 | 0.086   |
| 0.398   | 0.523   |
| 0.294  | -0.481  |
| 0.584   | 0.375   |
given new entrants to the panel, the average age of respondents’ increased by less than 1 year between 1995 and 2001). In particular, the period 1998 to 2001 saw large improvements in these unobservables, which could relate to factors such as the availability of goods and services or more positive expectations held by the population. Further research using area disaggregated measures is needed to further untangle these effects.

The final important factor in explaining the movements in life satisfaction is changes in the unobservable characteristics or fixed-effects of panel members, caused by new entrants into the panel, and attrition. Our findings clearly support the reasonable hypothesis that panel attrition might be strongly associated with low levels of life satisfaction, or the socio-economic characteristics associated with low satisfaction. In particular, if we do not allow for this effect, we would have predicted that average latent life satisfaction for men would have risen by 0.791 over the period 1995 to 2001 rather than 0.523 (0.959 compared to 0.584 for females).

6. Conclusions
In this paper we have explored the factors that drove the large movements in life satisfaction reported by Russians over the period 1995-2001. As noted by Schyns (2001), ‘the socio-economic changes that have occurred in Russia in the past decade have caused this country to become a true laboratory for the social sciences’ (p. 173). In this respect, we have built upon a number of existing studies that have used panel data to look at various issues relating to life satisfaction and well-being in post-transition Russia. We extend this literature in three main ways. Firstly, we have applied a recently developed fixed-effects ordinal estimator that allows for the ordinal nature of our life satisfaction measure, controls for fixed-effects or personality traits that psychologists have documented as major determinants of well-being, and utilises much more available information about respondents than the binary conditional estimator of Chamberlain that has been widely used in the previous life satisfaction literature. Secondly, we have undertaken a decomposition analysis that allows for the bias that panel attrition can cause when documenting trends in life satisfaction. This contrasts to a number of previous studies that only use a balanced panel of respondents. Thirdly, we use a longer panel of the RLMS over the period up until 2001. This is important given the large increase in life satisfaction reported by Russians since 1998.

Our main focus has been to establish the predictive power of real income changes in explaining movements in life satisfaction. The relationship between income and life satisfaction remains a contentious issue, and the large variation in real incomes in Russia provides us with an interesting environment to further explore this relationship. Furthermore, given the size of these income changes over a relatively short period of time, it can be reasonable argued that these income changes were
mostly exogenously determined (Senik, 2004). In our previous studies of changes in life satisfaction in East Germany following reunification (Frijters et al., 2004a, 2004b), we found that life satisfaction clearly responds to income changes and that real income increases drove about 20% of the increase in life satisfaction observed in East Germany between 1991 and 2001. We find a similar role for income in post-transition Russia. Overall, increased real income explained about 10% of the increase in life satisfaction observed between 1995 and 2001. However, over the most turbulent periods income had an even larger role. For example, the rapid fall in real income experienced between 1996 and 1998 accounted for 19% of the decline in life satisfaction for men and 27% for women. Our results therefore find a much greater role for income in determining life satisfaction than is widely found in the literature.

We have also been able to confirm the results of previous studies of Russia that used a shorter panel, namely, that life satisfaction rises significantly in response to moving from unemployment to employment, and falls in response to wage arrears, poor health and marital dissolution. We have also found a positive effect of increases in average area income, conditional on own household income, in promoting life satisfaction and also that moving to a large metropolitan city in Russia leads to a substantial rise in life satisfaction.

Finally, the results for our causal decomposition analysis clearly highlight the importance of allowing for panel attrition when documenting trends in life satisfaction, since it is reasonable to think that those with the lowest levels of satisfaction might have the highest probability of dropping out of the panel. In this respect, we would have over-predicted the increase in life satisfaction observed in Russia between 1995 and 2001 by around 30%, if no account was taken of panel attrition.

References


